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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,179	02/12/2002	Qian Lin	10006288-1	5006

7590 02/02/2004

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EXAMINER

MOE, AUNG SOE

ART UNIT	PAPER NUMBER
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2612

3

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/074,179

Applicant(s)

LIN, QIAN

Examiner

Aung S. Moe

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-5, 9-11 and 14-26 is/are rejected.
- 7) ☐ Claim(s) 6-8, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 16 is objected to because of the following informalities: In claim 16, line 1, please change "figure of merit." too - - figure of merit; - -. Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1, 2, 3, 9, 20-23 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Molloy Desormeaux (U.S. 6,577,821).

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Regarding claim 1, Desormeaux '821 discloses a method for assessing the photo quality of a captured image in a digital camera (i.e., Fig. 4; col. 7, lines 5+), said method comprising:

checking, in-camera, the photo quality of the captured image to determine if the photo quality is acceptable; and providing a corresponding photo quality feedback to a camera user (i.e., Figs. 32-37, 44-45, 47; col. 27, lines 50+, col. 28, lines 55+, and col. 29, lines 55+).

Regarding claim 2, Desormeaux '821 discloses computing a photo sharpness figure of merit for the captured image (Fig. 34; the figure 242/240); and comparing said computed photo sharpness figure of merit to a threshold to determine if said photo sharpness figure of merit exceeds said threshold (i.e., col. 14, lines 40+, col. 15, lines 5+, col. 26, lines 50+, col. 28, lines 5+, col. 29, lines 65+).

Regarding claim 3, Desormeaux '821 discloses the step comprises: generating a line pixel profile of the captured image (i.e., see Figs. 2, 24, and 27); computing an absolute difference in a channel gray level between adjacent pixels in the horizontal direction using said line pixel profile (i.e., noted gray level is stored in the memory 54 and it's used during the quality computing processing to determine an absolute difference values; see col. 15, lines 5-15, col. 31, lines 15+); and picking the maximum absolute difference as the photo sharpness figure of merit (i.e., col. 14, lines 44+; col. 31, lines 20+).

Regarding claim 9, Desormeaux '821 discloses wherein the checking step comprises: computing a magnitude of a two-dimensional gradient of a channel; and picking a maximum two-dimensional gradient magnitude as the photo sharpness figure of merit (i.e., see Figs. 39-42; col. 14, lines 40+, col. 35, line 40 – col. 36, lines 5+).

Regarding claim 20, Desormeaux '821 discloses wherein said checking step comprises: computing a flare (i.e., Under/Over Exposure control) figure of merit for the captured image (i.e., col. 24, lines 49+, col. 25, line 64 - 26, lines 1+); comparing said computed flare figure of merit to a threshold to determine if said flare figure of merit exceeds said threshold (i.e., col. 28, lines 5+, col. 31, lines 5+, col. 35, lines 40+); and providing a corresponding flare feedback to said camera user (i.e., see Figs. 32-37).

Regarding claim 21, Desormeaux '821 discloses wherein the computing step comprises: generating a binary mapping of the captured image (i.e., noted the digitally divided mapping of the captured image as shown in Figs. 2 and 24) containing only black (i.e., the dark pixel from the digitally divided grid as shown in Fig. 24) and white (i.e., the bright pixel from the digitally divided grid as shown in Fig. 24; such as the sun in the scene can cause bright pixels) pixels, said white pixels representing saturated pixels of the captured image (i.e., noted from Fig. 24 that the sun in the captured scene could represent saturated pixels); and subdividing said binary mapping into a plurality of regions (i.e., see Figs. 1 and 24).

Regarding claim 22, Desormeaux '821 discloses comprising: computing a percentage of white pixels in each region to obtain a flare figure of merit; and determining if flare figure of merit in at least one region exceeds a flare threshold (i.e., col. 15, lines 15+; col. 35, lines 45 – col. 36, lines 30+).

Regarding claim 23, Desormeaux '821 discloses wherein said flare threshold is at least 50% (i.e., col. 15, lines 5+, col. 30, lines 20+, col. 31+).

Regarding claim 25, Desormeaux '821 discloses a system for assessing the photo quality of a captured image in a digital camera, said system comprising: an image capture unit (Figs. 1 4

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and 24, the element 10); an image processor operative coupled to said image capture unit for processing the captured image (i.e., Fig. 4, the element 80); a photo quality check unit operative coupled to said image processor for checking, in camera, the photo quality of the processed image (i.e., Fig. 4, 32-37; col. 27, lines 50+); and a display (26) operatively coupled to said photo quality check unit for providing a corresponding photo quality feedback to a camera user (i.e., see Figs. 32-37).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 5 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Desormeaux '821 in view of Tretter (U.S. 6,463,173).

Regarding claims 4 and 10, Desormeaux '821 does not explicitly show that the step of transforming RGB color space into YCrCb color space or L*a*b* color space as recited in present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Tretter '173. In particular, Tretter '173 teaches that it is conventionally well known in the art to transform the RGB color space into YCrCb color space or L*a*b* color space as claimed (i.e., col. 7, lines 1-25+).

In view of the above it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Desormeaux '821 as taught by Tretter '173, since Tretter '173 states at col. 3, lines 45+ that such a modification would produce contrast enhanced digital images thereof.

5. Claims 14, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Desormeaux '821 in view of Luo (U.S. 6,134,339).

Regarding claim 14, it is noted that although Desormeaux '821 suggested the quality of the digital image can be analyzed to determine eye positions within the image (i.e., see col. 18, lines 10+) so that the quality of part of the captured image (i.e., the Face of the image 148 as shown in Fig. 14B and 24) may be determined by comparing with the threshold if the quality figure of merit exceeds the threshold (i.e., col. 31, lines 5+, col. 35, lines 50+ and col. 36, lines 5+), Desormeaux '821 does not explicitly state "a face quality" computing as claimed.

However, computing, in a camera, a face quality figure of merit for the captured image by comparing the computed face quality figure of merit to a threshold to determine if the face quality figure of merit exceeds the threshold is well known in the art as taught by Luo '339 (i.e., see Figs. 4 and 5; col. 2, lines 15+, col. 7, lines 15+, col. 8, lines 40+, col. 11, lines 5+).

In view of the above, having the system of Desormeaux '821 and then given the well-established teaching of Luo '339, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Desormeaux '821 as taught by Luo '339, since Luo '339 states at col. 4, lines 15+ that such a modification would enable

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enhancement and manipulation of images containing one or more human faces, so that, red-eye correction can be reliably performed.

Regarding claim 24, it is noted that Desormeaux '821 discloses a method for assessing the photo quality of a captured image in a digital camera as discussed in claims 1, 2, 3, 9, 20-23 and 25 (i.e., see above rejection above). Further, it is noted that although Desormeaux '821 suggested the quality of the digital image can be analyzed to determine eye positions within the image (i.e., see col. 18, lines 10+) so that the quality of part of the captured image (i.e., the Face of the image 148 as shown in Fig. 14B and 24) may be determined by comparing with the threshold if the quality figure of merit exceeds the threshold (i.e., col. 31, lines 5+, col. 35, lines 50+ and col. 36, lines 5+) and providing the corresponding part of image quality may be feed-backed to the user as shown in Figs. 33-37, Desormeaux '821 does not explicitly state that the "a face quality" computing step for determining the face quality figure of merit for the captured image as claimed.

However, the above-mentioned claimed limitations are well-known in the art as evidenced by Luo '339. In particular, Luo '339 teaches the step of computing, in a camera, a face quality figure of merit for the captured image by comparing the computed face quality figure of merit to a threshold to determine if the face quality figure of merit exceeds the threshold (i.e., see Figs. 4 and 5; col. 2, lines 15+, col. 7, lines 15+, col. 8, lines 1+, col. 11, lines 5+), and outputting the appropriate error code if the face quality of merit does not satisfy, thus, the eye-defect correction may be performed automatically in the digital camera (40) (see col. 8, lines 5+).

In view of the above, having the system of Desormeaux '821 and then given the well-established teaching of Luo '339, it would have been obvious to one having ordinary skill in the

art at the time the invention was made to modify the system of Desormeaux '821 as taught by Luo '339, since Luo '339 states at col. 4, lines 15+ that such a modification would enable enhancement and manipulation of images containing one or more human faces, so that, the eye-defect correction may be reliably performed automatically in the digital camera (i.e., see col. 8, lines 30+).

Regarding claim 26, it is noted that Desormeaux '821 discloses the system as discussed above and further comprises: a photo sharpness/flare (i.e., the exposure and blur; see col. 27, lines 55+, col. 29, lines 5+) check module operative coupled between said image processor (Figs. 4, 25, and 50; the elements 80, 106, 81 and 54) and the display (26) for checking in-camera the photo sharpness/flare of processed image as shown in Figs. 33-37.

Further, it is noted that although Desormeaux '821 suggested the quality of the digital image can be analyzed to determine eye positions within the image (i.e., see col. 18, lines 10+) so that the quality of part of the captured image (i.e., the Face of the image 148 as shown in Fig. 14B and 24) may be checked (i.e., col. 31, lines 5+, col. 35, lines 50+ and col. 36, lines 5+) by providing the corresponding part of image quality on the display (26) to the user as shown in Figs. 33-37, Desormeaux '821 does not explicitly state that the "a face quality check module operatively coupled between the image processor, and checking, in-camera, the face quality of the processed image as claimed.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Luo '339. In particular, Luo '339 teaches the use of a face quality check module operatively coupled between the image processor (Fig. 4, the elements 46/44), and checking, in-camera, the face quality of the processed image (i.e., see Figs. 4 and 5; col. 2, lines 15+, col. 7,

lines 15+, col. 8, lines 1+, col. 11, lines 5+), and outputting the appropriate error code if the face quality of merit does not satisfy, thereby the eye-defect correction may be performed automatically in the digital camera (40) (see col. 8, lines 5+).

In view of the above, having the system of Desormeaux '821 and then given the well-established teaching of Luo '339, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Desormeaux '821 as taught by Luo '339, since Luo '339 states at col. 4, lines 15+ that such a modification would enable enhancement and manipulation of images containing one or more human faces, so that, the eye-defect correction may be reliably performed automatically in the digital camera (i.e., see col. 8, lines 30+).

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Desormeaux '821 in view of Luo '339 as applied to claims as discussed above, and further in view of Lin et al. (U.S. 6,016,354).

Regarding claim 19, although the combination of Desormeaux '821 and Luo '339 shows the step of detecting facial image data from the captured image (i.e., see col. 2, lines 15+ and col. 15+), the combination of Desormeaux '821 and Luo '339 does not explicitly show the steps of converting the detected facial image data into a binary mask of only white and black pixels, wherein the white pixels represent pixels of red color and the black pixels represent pixels of colors other than red; and checking the binary mask for presence of white pixels as claimed.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Lin '354. In particular, Lin '354 teaches the steps of converting the detected facial

image data into a binary mask of only white and black pixels, wherein the white pixels represent pixels of red color and the black pixels represent pixels of colors other than red; and checking the binary mask for presence of white pixels (col. 3, lines 15+, col. 5, lines 5+ and col. 6, lines 1+) as claimed.

In view of the above, having the system of Desormeaux '821 and then given the well-established teaching of Lin '354, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Desormeaux '821 as taught by Lin '354, since Lin '354 states at col. 2, lines 10+ that such a modification would automatically reduce redeye in an image with minimal user intervention.

7. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Desormeaux '821 in view of Luo '339 as applied to claims as discussed above, and further in view of Cheatle (U.S. 2002/0191861).

Regarding claim 15, the combination of Desormeaux '821 and Luo '339 discloses the step of detecting facial image data from the captured image (i.e., see Fig. 4/7; col. 2, lines 15+ of Luo '339). Further, the combination of Desormeaux '821 and Luo '339 does not explicitly show the step of converting the detected image data from RGB color space into L*a*b* color space as claimed.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Cheatle '861. In particular, Cheatle '861 teaches the step of converting the detected image data from RGB color space into L*a*b* color space as claimed (Fig. 1, page 5, the paragraphs 0086-0089).

In view of the above, having the system of Desormeaux '821 and then given the well-established teaching of Cheatle '861, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Desormeaux '821 as taught by Cheatle '861, since Cheatle '861 states at page 2, the paragraph 0011 that such a modification would provide a more convenient method for capturing and cropping electronic images thereof.

Regarding claim 16, the combination of Desormeaux '821, Luo '339 and Cheatle '861 discloses the step of computing the means of L^* (i.e., the Luminance signals of the image) to obtain a brightness figure of merit (i.e., see col. 18, lines 1+ of Desormeaux '821; and page 5, paragraphs 0086+ of Cheatle '861); determining if the brightness figure of merit falls within a brightness threshold range (i.e., col. 31, lines 1-35 of Desormeaux '821).

Regarding claim 17, the combination of Desormeaux '821, Luo '339 and Cheatle '861 discloses the step of computing the local standard deviation of L^* to obtain a noise (i.e., see Fig. 24 of Desormeaux '821; and page 5, paragraph 0086 of Cheatle '861) figure of merit; and determining if said noise figure of merit exceeds a noise threshold (i.e., col. 31, lines 5+ of Desormeaux '821).

Regarding claim 18, the combination of Desormeaux '821, Luo '339 and Cheatle '861 discloses the step of computing the overall standard deviation of L^* (i.e., the average luminance values of the image; see col. 14, lines 40+, col. 31, lines 1+ of Desormeaux '821; and page 5, paragraph 0086 of Cheatle '861) to obtain a contrast figure of merit; and determining if said contrast (i.e., Brightness) figure of merit falls within a contrast threshold range (i.e., col. 31, lines 1-35 of Desormeaux '821).

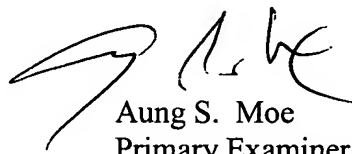
Allowable Subject Matter

8. Claims 6-8 and 12-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung S. Moe whose telephone number is 703-306-3021. The examiner can normally be reached on Mon-Fri (9-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9700.



Aung S. Moe
Primary Examiner
Art Unit 2612

A. Moe

January 23, 2004